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TOWARDS SUSTAINABLE DEVELOPMENT IN ETHIOPIA

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INTRODUCTION

The concept of sustainable development (OUR COMMON FUTURE, 1987: 8) presents one of the biggest challenges especially to poor national economies. In Ethiopia, future generations will outgrow present numbers of people if trends persist, possibly by a factor four in fifty years. However, the predicted 200 million people in 2040 can not be fed with the present ox-plough farming systems, since grazing land will become extremely scarce within the next 10-20 years already. Forest resources will dwindle to a minimum because of the competition for agricultural land. Major government efforts in afforestation so far did not match up with deforestation rates. Even if one third of all farmland will be mechanized within this time span, the available land resources of the country may provide the basic needs of a maximum 100 million people at best (Hurni, 1988).

Apart from the extinction of plant and animal species, the most irreversible damage done to a single natural resource in present day Ethiopia is soil erosion. Its toll has been estimated at 1.5 billion tons of soil loss per year (Hurni, 1986a), affecting the national economy with a decrease in agricultural productivity of about 1 percent per year. Soil conservation implementation, though exponentially increasing over the last 16 years, covers merely 10% of all cultivated land in need of soil protection, or one percent of the total land area (Kebede Tato, these proceedings).

The present trends of extreme and accelerating degradation, and proportionally low conservation, call for an ever-increasing and concerted action plan for environmental rehabilitation, agricultural and livestock development, and family planning under the umbrella of a National Environmental Action Plan (NEAP). The feasibility of implementing such plan, however, is highly constrained by the present circumstances of economic, social and political instability.

## RESOURCE UTILIZATION: A LOOK FROM BOTTOM UP

A subsistence farmer is fully dependent on three major environments: First, on natural factors like rainfall, soils, etc.. Second, on land use issues like land availability, internal farm implements, draught animals, etc.. And third, on human factors such as available labour force at farm or community level. Truly "external" inputs are at a minimum and linked to much uncertainty. Government policies of land ownership, land distribution, and marketing affect subsistence farming to some degree only, while the variability of natural factors is of immediate consequence to his agricultural production.

The possibility of shifting farmland to better areas, i.e. to do swiddening agriculture and to let part of the land fallow for some years before re-cultivating it, and other traditional systems ensuring sustainability in the long term, may be hindered by Government policies and thus lead to accelerated degradation. However, also here the biggest threat is land scarcity due to increase in population, considerably narrowing farmland in most regions of Ethiopia.

A farmer's competence for (re-)acting in an environmentally sound manner depends on three major factors: First, his knowledge about destructive processes and about techniques to react against them, second, his abilities to do something within the context in which he subsists, and third, his attitudes towards such action, i.e. his willingness to carry out "better" activities (Janssen, pers. comm.). As examples, missing "knowledge" may be rooted in the fact that degradation due to sheet and rill erosion is too slow to be realized as threatening within a generation. Missing "abilities" may be the constraints imposed by land scarcity, and missing "attitudes" may be created by adverse government policies of land ownership.

Many constraints why farmers do not do things that an outsider would like to see them doing depend on the above three factors. Questions of perception, of land security, and of farm economics may give an answer why soil conservation has not been successfully adopted by farmers on their own in the past 15 years. For example, an economic analysis of one of the most important soil conservation measures needed for Ethiopia, namely Fanya juu terrace development on cultivated land, was carried out, taking all costs, benefits and ecological parameters into consideration, and assuming a work wage of two Ethiopian Birr per day.

The analysis is summarized in Figure 1. It shows that a farmer on a 10 percent slope will have a net and sustainable benefit after two years already, a farmer on a 20 percent slope after six years, on a 40 percent slope after 20 years, and on a 60 percent slope after 25 years. From these figures it becomes very clear that such activity can not be of priority for a farmer who has a time perspective of few months to years only. Hence, Government subsidies are needed for

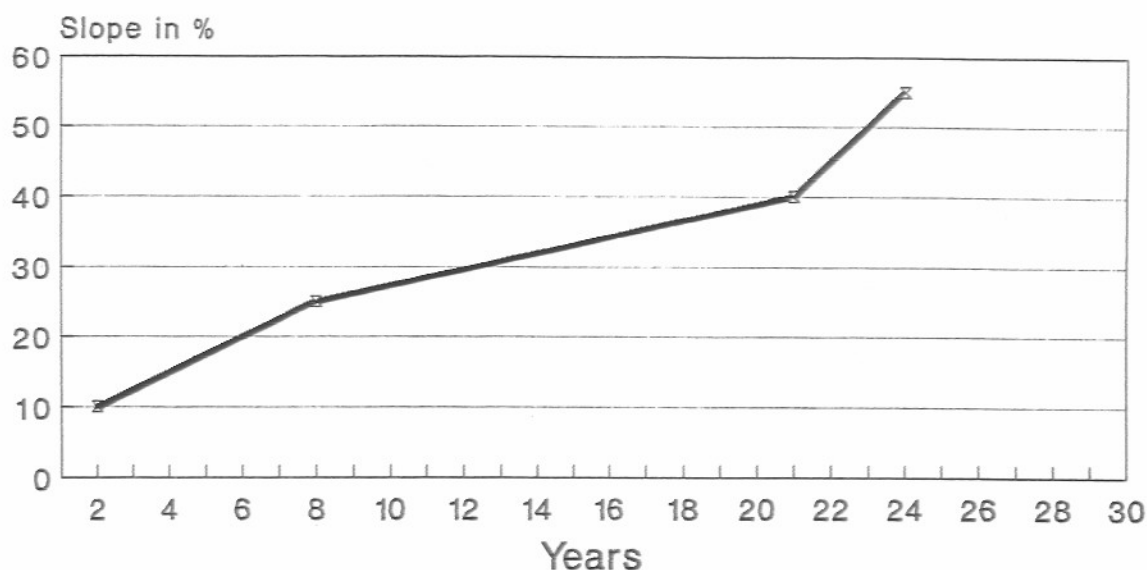


Figure 1: Subsidy need for soil conservation: The case of Fanya juu terrace development structures widely applied and recommended for cultivated land in Ethiopia. Given are years needed to reach equal net incomes as without soil conservation, dependent on slope gradient.

implementing soil conservation. In addition to economic analyses, environmental accounting will definitely become a key issue also with international supporting institutions (cf. Goering, these proceedings).

#### TRADITIONAL CONSERVATION MEASURES

Much hope is allocated to the inherent traditional capabilities of the Ethiopian peasantry to preserve the natural resources of their own environment (cf. Tewolde B. G. Egziabher, these proceedings). Although impressive and successful over millennia, traditional peasant farming today is not following sustainable practices any more.

Swiddening agriculture, i.e. moving cultivated land and fallowing long periods, is feasible only if free moving is allowed and if space is available. Both are not possible any more under present circumstances. On a 30 percent slope, at least 10 years of grass fallow are needed for soil regeneration after a single year of cultivation. No farmer follows this practice - he may not have enough land available, or he may be afraid of losing it to the Peasant Association if he does not cultivate it annually.

Traditional terracing of cultivated land - as exemplified in the Konso area - is an excellent means of soil protection. Unfortunately, ox-plough systems need terraces more than 5 metres wide, and these can only be developed on slopes if soils are deep enough. For example, on a 50 percent slope

one metre of soil depth is needed for such a wide terrace. The Konso terraces are cultivated by hoe and only about one metre wide on very thin soils. If other farmers would practice hoe agriculture like the Konso ethnic group, they could use steep slopes for cultivation in a sustainably way. But would they want to do this?

Other traditional conservation practices, including fragmentary terraces, intercropping, mixed cropping, drainage ditches, provide some effects, but are generally not reducing soil erosion to tolerable levels. Nevertheless, they are an extremely worthy starting point to develop adapted measures which may more easily be accepted by farmers. In two guideline handbooks produced by the Department of Community Forests and Soil Conservation of the Ministry of Agriculture, traditional practices, systems and techniques have been included as much as possible (Hurni, 1986b; Sjöholm, 1989).

#### NATURAL RESOURCES: A LOOK FROM TOP DOWN

Ethiopia's natural resources of land, soil, water, and wild and domestic flora and fauna are all under pressure. Scenarios of present day trends in the highlands, projected for the next 50 years, reveal that pressure on grazing land will be leading to livestock crises in eight out of the 14 (old) regions before the year 2000 (see Figure 2). Degradation and pressure on cultivated land will lead to cropland crises before the year 2040 in nine out of 14 (old) regions (see Figure 3).

Another natural resource scenario can be made for modified trends, assuming that "conservation-based" activities, including family planning, are successfully implemented in the near future. Although the cropland crisis may be averted in 10 out of 14 regions with such scenario, the livestock crisis still persists almost as before.

For the Government and its policy makers, the question arises if any top-down measures at all may be feasible to avert major catastrophic developments in the medium term. Ideas of resettlement and villagization implemented in the past, were intended to improve the situation, although its results have been questionable to say the least. Concerning resettlement the above figures seem to justify the movement of people to the western parts of Ethiopia. However, apart from its direct and dominantly negative implications on individuals and communities, long-term considerations reveal that the capacities of the western regions Illubabor, Kefa, Wellega and Gojam are not sufficient to alleviate the pressure on eastern regions like Wello, Tigray, Harerge, etc. in the long term, even if millions of people are resettled in the next 20 years. As a consequence, development options have to be found within each region, and not in the country as a whole.

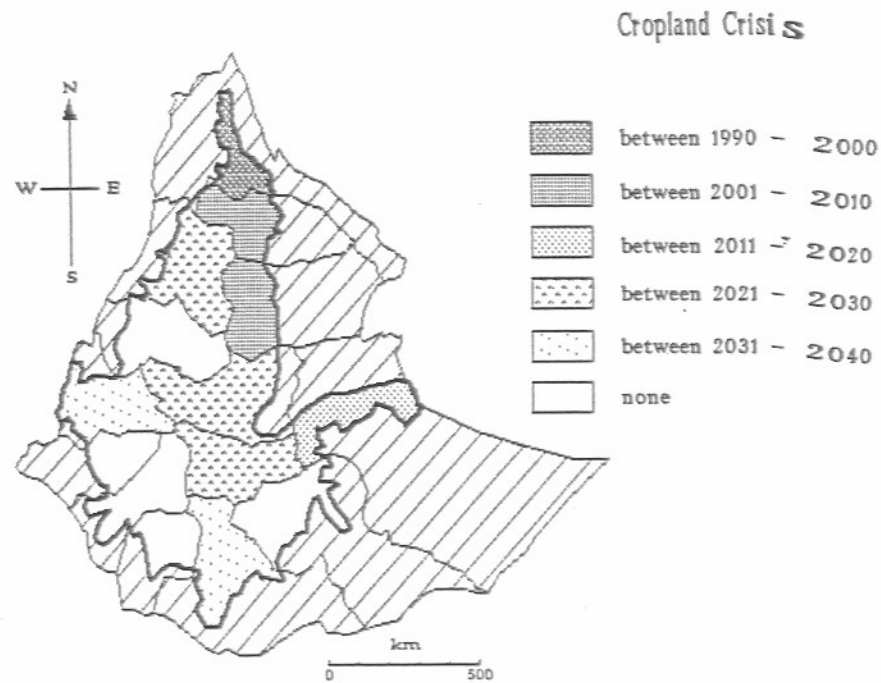


Figure 2: Major cropland crisis to be expected by region if present trends of population and livestock growth, degradation and conservation, and agricultural and livestock development are projected for the next 50 years. Mapped by Gaschen (1990), from Hurni (1988).

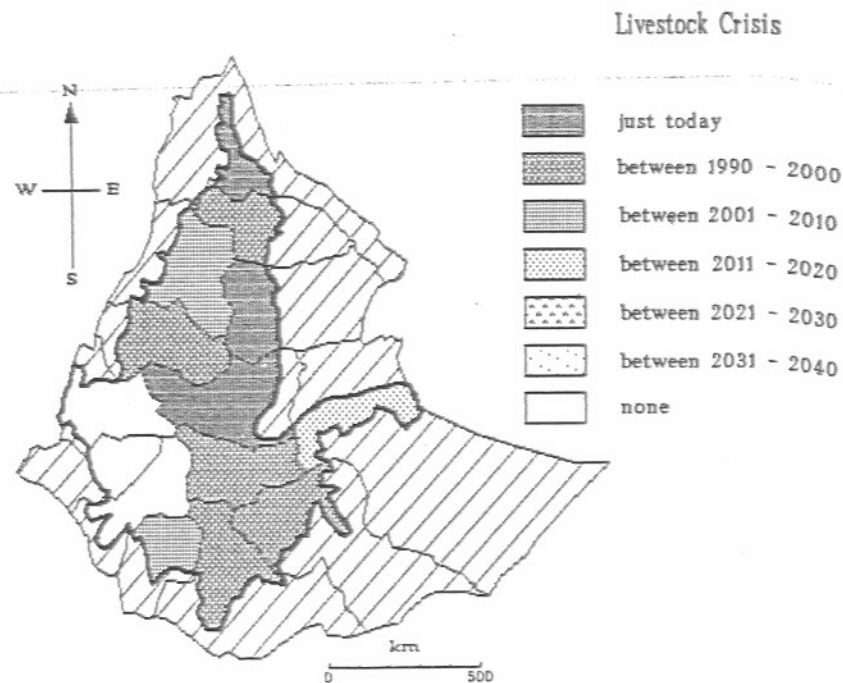


Figure 5: Major livestock crisis to be expected by region if present trends of population and livestock growth, degradation and conservation, and agricultural and livestock development are projected for the next 50 years. Mapped by Gaschen (1990), from Hurni (1988).



The "new" economic policy and ownership regulations announced recently (March 1990) may have a positive impact on improvements of individual farms, since long-term investments on farm plots will become more attractive, and fallowing may be allowed without the danger of "unused" land being taken away and redistributed by the Peasant Association. More democracy and autonomy at regional levels will additionally be needed to support local development efforts. However, support and incentives to the farmers will have to increase manyfold, from presently about 200 million US \$ per year to at least 600 million, and institutions for implementing programmes will have to be thoroughly evaluated and improved (Tewolde B. G. Egziabher, in press; Alemneh Dejene, these proceedings).

### CONCLUSIONS

Sustainable development in Ethiopia can be achieved if human and financial resources can be mobilized at all levels, including international cooperation, and made available to local land users. For integration at local levels some 20'000 well-selected and trained extensionists will be needed in the medium term, i.e. five times more than at present. Implementation must be accompanied by conservation-supporting policies and attractive economic stimulation and measures. Do do conservation alone is not mandatory. However, it will be indispensable to seek an integration of all programmes and strategies in a "National Environmental Action Plan (NEAP)".

There exists stimulating experience on soil conservation integrated with rural development, named "the Anjeni model" after its locality (Shibru Tedla, in prep.). Such inviting approaches have to be studied carefully for wider application.

For "conservation-based" development, programmes in family planning must be started at the same time. Family planning includes a variety of developments, including mother and child care, primary health care, economic and old-age security, and many more. Concerted efforts may succeed to stabilize population growth before it is "stabilized" through environmental or other external forces.

Sustainable development, however, calls for more local autonomy and participation at all levels, and the making available of experience from within and outside the country.

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